

# Chapter 44

## Charger Problems

At the beginning of this project, my pastor told me it was God's will that the Volt Vette Project should succeed. If that is the case, the devil is clearly working hard to frustrate the Lord!

Many chapters ago, Lee worked over the Russco charger to make certain my charger would deliver trouble-free service. So I was really ticked off when, over about 4 days, the Russco faded and died. It had operated for only 2 years!

Chris came over with his test equipment, but could not zero in on the problem. So off I go to Lee's house. We spend a good 2 hours testing and working over the charger. Lee is forced to take it apart.



Not a fun job!



On the circuit board, we find 2 diodes that overheated and burnt the board. Problem solved!

But no, the diodes still work. But Lee replaces them anyway, just to be safe.

After much more testing, Lee thinks 2 parts failed at the same time. I'm told only 2 other Russco chargers are known to have ever failed. Mine is apparently the first to have a double failure, a bit of very rare, bad, bad luck!

I will have to leave the charger with Lee to find and fix the problems.

This means I will have to charge the batteries one by one with my 12-volt charger. I really hate that! The charger is not happy either. Running it all the time causes it to overheat and shut down.



I bolt on a muffin fan to the back of my charger. With plenty of cooling air, the charger can run all day.

As long time readers will remember, the Volt Vette is to be used for 3 different things:

1. Be a show car for public display.
2. Be my every day work car.
3. Be a test bed for new ideas.

Now is the time to test a new idea.

If I used two 110 volt chargers, each producing 156 volts DC, can I charge up my battery pack as fast as one expensive 220-volt charger?

Since it is much easier to find a 110v outlet than a 220v outlet, I might have the convenience of 110 and the power of 220.

So I order another Russco charger.

That leads to a new problem.

If I have two 18 amp chargers plugged into one 15 amp circuit, that will most likely trip the circuit breaker.

What is needed is a new 20-amp circuit into the garage.

The guys say, don't stop there! I could run a second 20-amp line into the garage, one circuit for each 18 amp charger.

That would leave the 15-amp line free to run my power tools.

I get a book on wiring and set to work.

To avoid having to redo things, I invite the city inspector to drop by and go over my plans. He tells me what changes I need to make to be sure that my work will conform to the local codes.

In my opinion, there should be a uniform national electrical code, but the powers-that-be didn't ask for my input. So, every city has a code that may be a little different from the others.

My city calls for child-proof outlets, other than that, my plans were good to go. The child-proof outlets are costly and hard to find.

At this point in the project I am not at all surprised.

Since my garage is all concrete, all wiring must be enclosed in a kind of pipe called conduit. You have a choice of metal or plastic. I think the plastic is easier to work with, so I use that.



I normally use a hacksaw to cut pipe, but I discover a plastic pipe-cutting tool makes a cleaner, burr free, cut.



And the sharp blade folds safely away when not in use.

The work went slowly but smoothly. Should have upgraded the wiring years ago!



In the photo you can see the shelf I built to hold the second charger.



Brad, Chris, Dave, and Dale drop by to wire up the new charger.

With the old charger still under repair, the new charger is placed in the Volt Vette. I can say goodbye to single battery charging.

Lee says that if a charger is hot to the touch, it is a good sign it needs more cooling.



Plopping a small house fan over the open cargo hatch seems to get the job done for now.

Chris tells me that, with two plugs under the fuel door, bad things might happen if someone plugs the 156 volt dc line into the 110 volt ac socket.



So I put in a different type of plug to avoid fatal future foolishness.  
In the photo above, you can see that the 110 volt socket has 3 prongs and the 156 volt one has 5.

Next up: cold weather testing.